

WHAT IS CLAIMED IS:

1. A multilayer film for producing label material, comprising:
 - a) two outer layers of low-density polyethylene;
 - b) a core layer of highly crystalline polypropylene or of a blend with up to 20% of low-density polyethylene; and
 - c) adhesion-promoting layers of polypropylene, wherein the adhesion-promoting layers comprise:
 - (i) 5-30% by weight of ULDPE ($d \leq 0.875$),
 - (ii) 0-50% by weight of LDPE and/or LLDPE, and
 - (iii) 20-95% by weight of a random copolymer of polypropylene with a 1-alkylene having 4-20 carbon atoms.
2. A multilayer film according to claim 1, wherein the total film thickness is approximately 40-100 μm and wherein the outer layers comprise 10-30% of the film thickness, the adhesion-promoting layers comprise 10-30% of the film thickness, and the core layer comprises 60-90% of the film thickness.
3. A multilayer film according to claim 1, wherein more than 80% by weight of the core layer comprises polypropylene having a density of 0.90-0.92 g/cm^3 , a melt index of 5-10 g/10 min (MFI 230°C/2.16 kg), a melting range of 150-180°C, and an elasticity modulus (ISO 178) of more than 1,600 MPa, in a blend with low-density polyethylene (LDPE) comprising a density of 0.90-0.940 g/cm^3 , a melt index of 0.1-22 g/10 min (MFI 190°C/2.16 kg), and a melting range of 100-135°C, in an amount of 2-20% by weight.

4. A multilayer film according to claim 1, wherein more than 80% by weight of the core layer comprises polypropylene having a density of 0.90-0.92 g/cm³, a melt index of 5-10 g/10 min (MFI 230°C/2.16 kg), a melting range of 150-180°C, and an elasticity modulus (ISO 178) of more than 2,000 MPa, in a blend with low-density polyethylene (LDPE) comprising a density of 0.90-0.940 g/cm³, a melt index of 0.1-22 g/10 min (MFI 190°C/2.16 kg), and a melting range of 100-135°C, in an amount of 2-20% by weight.

5. A multilayer film according to claim 1, wherein the outer layers comprise a low-density polyethylene (LDPE) or ultralow-density polyethylene having a density of from 0.90 to 0.940 g/cm³ a melt index MFI 190°C/2.16 kg of 0.1-22 g/10 min, and a melting range of 100-135°C.

6. A multilayer film according to claim 1, wherein the outer layers comprise a low-density polyethylene (LDPE) or ultralow-density polyethylene having a density of from 0.925 to 0.940 g/cm³, a melt index MFI 190°C/2.16 kg of 0.1-22 g/10 min, and a melting range of 100-135°C.

7. A multilayer film according to claim 1, wherein the outer layers comprise a low-density polyethylene (LDPE) or ultralow-density polyethylene having a density of from 0.925 to 0.940 g/cm³, a melt index MFI 190°C/2.16 kg of 1-8 g/10 min, and a melting range of 100-135°C.

8. A process for producing a multilayer film according to claim 1, comprising:

shaping the polymer layers using a 5-layer coextrusion unit at temperatures of 200-250°C; and

solidifying the polymer layers using a chill roll having a surface temperature of 40-70°C.

9. A process according to claim 8, wherein the step of solidifying comprises solidifying the polymer layers using a chill roll having a surface temperature of 50-60°C.

10. A label comprising a multilayer film according to claim 1.

11. A label affixed by an adhesive to a release liner made of abhesively coated film or paper wherein the label comprises a multilayer film according to claim 1.

12. An adhesion-promoting composition for multilayer films for label material, comprising:

- (i) 5-30% by weight of ULDPE ($d \leq 0.875$),
- (ii) 0-50% by weight of LDPE and/or LLDPE, and
- (iii) 20-95% by weight of a random copolymer of polypropylene with a 1-alkylene having 4-20 carbon atoms.

13. An adhesion-promoting composition according to claim 12, wherein component (iii) comprises 5-25% 1-alkylene monomers and 95-75% propylene monomers.

14. An adhesion-promoting composition according to claim 13, wherein component (iii) comprises comonomers ranging from butene to octene.

15. An adhesion-promoting composition according to claim 12, wherein composition comprises a pigment.

16. An adhesion-promoting composition according to claim 12, wherein the composition comprises a filler.

17. An adhesion-promoting composition according to claim 16, wherein the filler comprises titanium dioxide or chalk.

18. A multilayer film comprising the adhesion-promoting composition according to claim 12.

19. A label comprising the multilayer film according to claim 18.